

CLAIMS

1. A diamond cutting tool provided with a mono crystalline diamond tip (2) having a cutting edge ridge in a rounded shape at a front end,

5 wherein a portion of said cutting edge ridge serving at least as a cutting edge (5) is formed to have constant roundness by intersecting a first conical surface as a rake face (3) with a second conical surface as a flank (4), said cutting edge ridge is rounded with a radius of less than 100 nm, said first conical surface has a width of 1 to 5 μm , and a swarf release face (6) substantially perpendicular to a cutting direction is provided in a
10 portion on a side of said first conical surface opposite a line of said cutting edge ridge.

2. The mono crystalline diamond tool according to claim 1, wherein an intersection of said first conical surface and said swarf release face (6) has a rounded face.

15 3. The mono crystalline diamond tool according to claim 2, wherein said rounded face has a radius of 0.1 to 1.0 μm .

4. The mono crystalline diamond tool according to claim 1, wherein said first conical surface has a negative rake angle of 15° to 50° .

20 5. The mono crystalline diamond tool according to claim 1, wherein there is no lattice defect in a diamond crystal within a range of 100 μm from a front end of said cutting edge (5).

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